IN THE CLAIMS

Please amend the claims as follows:

1 (Currently Amended). A photonic bandgap microcavity comprising:

a deformable membrane structure that can experience strain using a plurality of thin-film actuators of at least 0.2% on the deformable membrane, said deformable membrane having semiconductor materials that do not exhibit piezoelectric effects; and

a photonic bandgap waveguide element formed on said deformable membrane structure having a defect region that breaks the periodicity of a plurality of periodic holes so that when said deformable membrane structure is strained, said photonic bandgap waveguide element is tuned to a selective amount due to the strain experienced in the defect region of said photonic bandgap waveguide element and said microcavity is not permanently disfigured.

2 (Previously Presented). The photonic bandgap microcavity of claim 1, wherein said deformable membrane structure comprises a sub-micron SiO_2 layer.

3 (Original). The photonic bandgap microcavity of claim 1, wherein said photonic bandgap waveguide element comprises a 1-dimensional photonic crystal.

4. Cancelled.

5. Cancelled.

6 (Original). The photonic bandgap microcavity of claim 1, wherein said selective amount comprises approximately 1%.

7. Cancelled.

8 (Previously Presented). The photonic bandgap microcavity of claim 7, wherein said at least one actuator produces strain on said deformable e membrane between 0.2 and 0.3%.

9 (Original). The photonic bandgap microcavity of claim 7, wherein said at least one actuator comprises a top electrode.

10 (Original). The photonic bandgap microcavity of claim 9, wherein said at least one actuator comprises a bottom electrode.

11 (Original). The photonic bandgap microcavity of claim 7, wherein said at least one actuator comprises a PZT piezoelectric actuator.

12 (Currently Amended). A method of forming a photonic bandgap microcavity comprising:

~~providing~~ forming a deformable membrane structure that can experience strain using a plurality of thin-film actuators of at least 0.2% on the deformable membrane, said deformable membrane having semiconductor materials that do not exhibit piezoelectric effects; and

forming a photonic bandgap waveguide element on said deformable membrane structure having a defect region that breaks the periodicity of a plurality of periodic holes so that when said deformable membrane structure is strained, said photonic bandgap waveguide element is tuned to a selective amount due to the strain experienced in the defect region of said photonic bandgap waveguide element and said microcavity is not permanently disfigured.

13 (Previously Presented). The method of claim 12, wherein said deformable membrane structure comprises a sub-micron SiO_2 layer.

14 (Original). The method of claim 12, wherein said photonic bandgap waveguide element comprises a 1-dimensional photonic crystal.

15. Cancelled.

16. Cancelled.

17 (Original). The method of claim 12, wherein said selective amount comprises approximately 1%.

18. Cancelled.

19 (Previously Presented). The method of claim 18, wherein said at least one actuator produces strain on said deformable membrane between 0.2 and 0.3%.

20 (Previously Presented). The method of claim 18, wherein said at least one actuator comprises a top electrode.

21 (Previously Presented). The method of claim 20, wherein said at least one actuator comprises a bottom electrode.

22 (Previously Presented). The method of claim 18, wherein said at least one actuator comprises a PZT piezoelectric actuator.